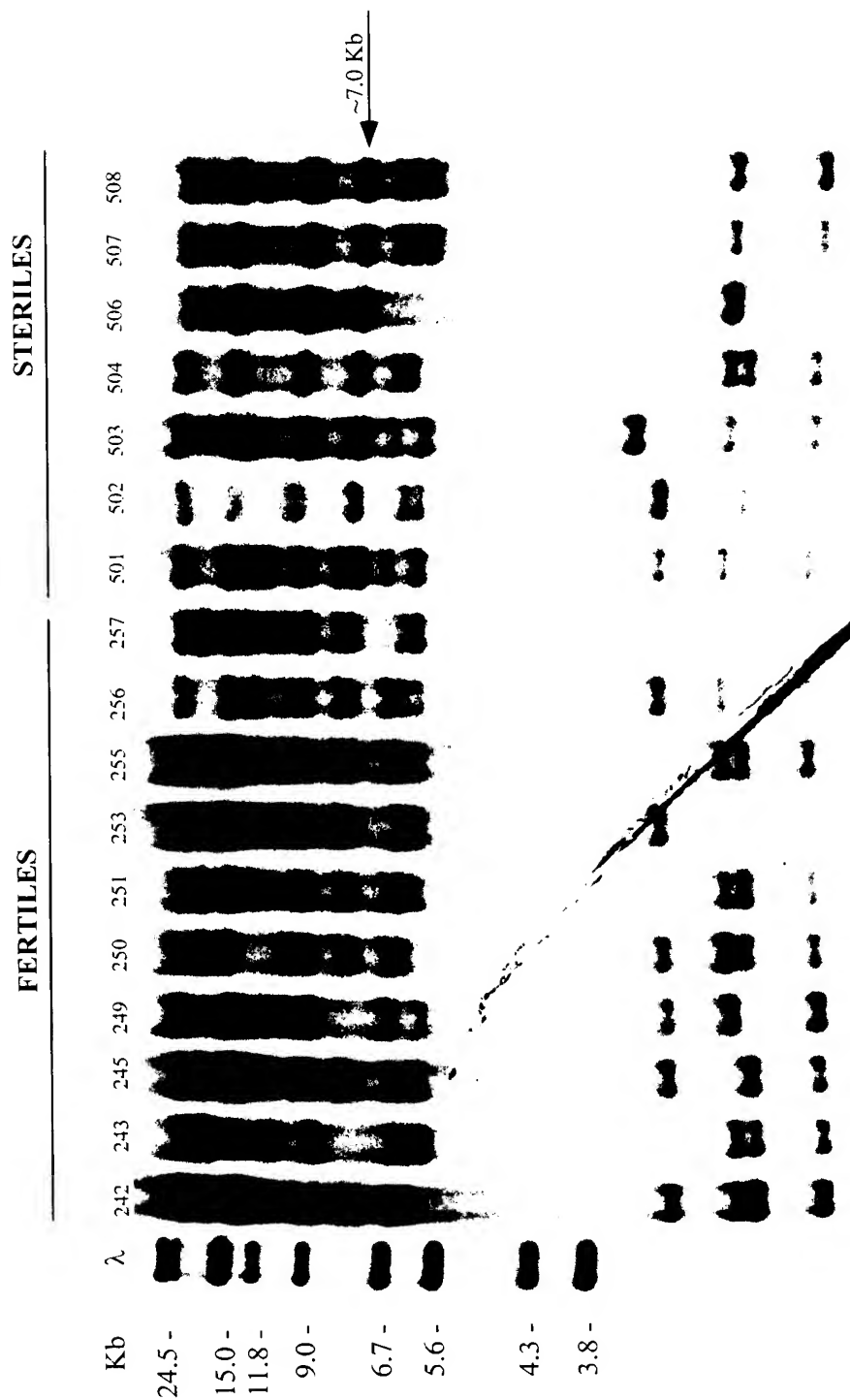


FIGURE 1



SOUTHERN OF *ECOR* I DIGESTED DNA FROM THE MALE STERILE FAMILY BS92-7.
HYBRIDIZED WITH THE *MU1* TRANSPOSON.

Figure 2

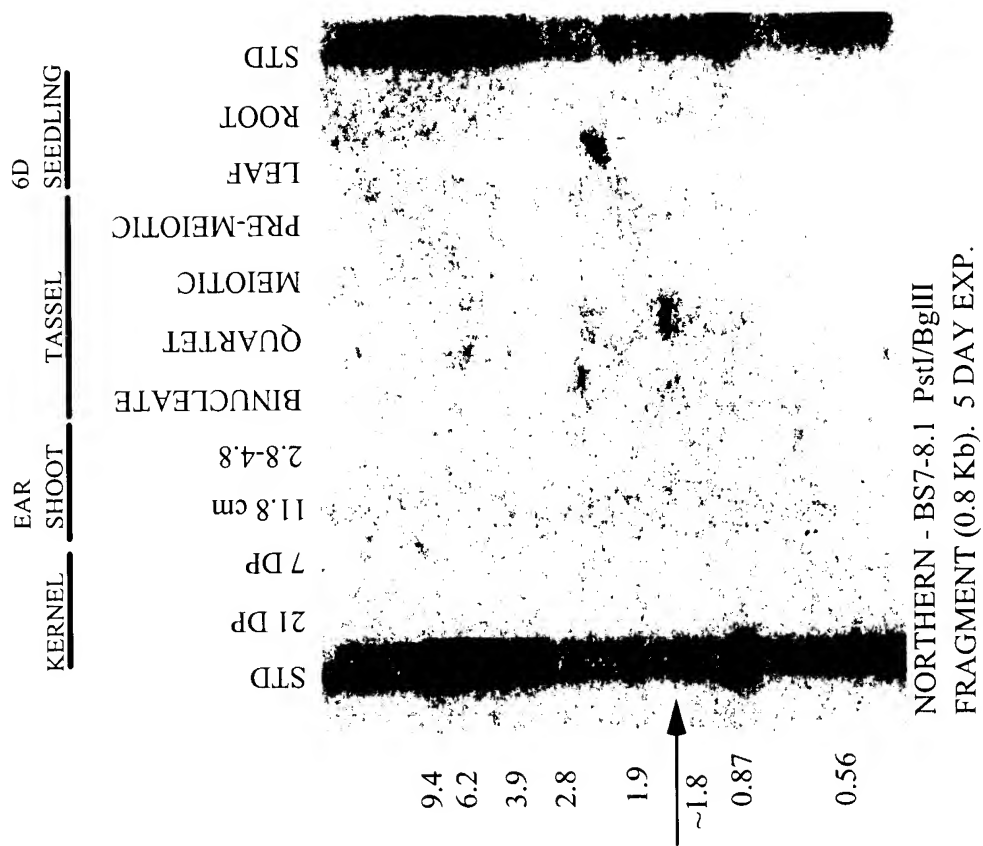


FIGURE 3

FIGURE 4

```

GGTGACCTCAAGCAAGGGCAAGGTATGCGTAACCGGGGCCTCAGGCTTTGTTGCCTCTTG
1  -----+-----+-----+-----+-----+-----+ 60
CCACTGGAGTTCGTTCCCGTTCCATACGCATTGGCCCCGGAGTCCGAAACAACGGAGAAC

b      V T S S K G K V C V T G A S G F V A S W -

                XhoI
                |
GCTTATCAAACGGCTCCTCGAGTCTGGATATCATGTGGTAGGGACTGTCAGGGACCCAGG
61  -----+-----+-----+-----+-----+-----+ 120
CGAATAGTTTGCCGAGGAGCTCAGACCTATAGTACACCATCCCTGACAGTCCCTGGGTCC

b      L I K R L L E S G Y H V V G T V R D P G -

AAATCACCAAAAAACAGCCCACCTTTGGAAATTACCTGGCGCTAAAGAGAGGCTGCAAAT
121 -----+-----+-----+-----+-----+-----+ 180
TTTAGTGGTTTTTTGTGCGGTGGAAACCTTTAATGGACCGCGATTTCTCTCCGACGTTTA

b      N H Q K T A H L W K L P G A K E R L Q I -

CGTGCGAGCTAATCTGTTGGAAGAAGGGAGCTTCGACAGCGCCGTGATGGCCTGTGAGGG
181 -----+-----+-----+-----+-----+-----+ 240
GCACGCTCGATTAGACAACCTTCTTCCCTCGAAGCTGTCGCGGCACTACCGGACACTCCC

b      V R A N L L E E G S F D S A V M A C E G -

TGTATTCCCACTGCATCCCCGCTCCTCGCTAAACCCGACTCTACTAGCAAGGAGGACAC
241 -----+-----+-----+-----+-----+-----+ 300
ACATAAGGTGTGACGTAGGGGGCAGGAGCGATTTGGGCTGAGATGATCGTTTCCTCCTGTG

b      V F H T A S P V L A K P D S T S K E D T -

GCTCGTCCCTGCGGTGAACGGTACTCTGAACGTGCTGAGATCGTGCAAGAAGAACCCCTT
301 -----+-----+-----+-----+-----+-----+ 360
CGAGCAGGGACGCCACTTGCCATGAGACTTGCACGACTCTAGCACGTTCTTCTTGGGGAA

b      L V P A V N G T L N V L R S C K K N P F -

CCTGAAAAGGGTCGTCCTTACGTCTTCGTCGTCTGCGGTGAGGATCAGGGACGACGGTGG
361 -----+-----+-----+-----+-----+-----+ 420
GGACTTTTCCCAGCAGGAATGCAGAAGCAGCAGACGCCACTCCTAGTCCCTGCTGCCACC

b      L K R V V L T S S S S A V R I R D D G G -

CCAGTCCAGTAACATCTCGCTGGACGAAACGACATGGAGCTCCGTGCCACTCTGCGAGAA
421 -----+-----+-----+-----+-----+-----+ 480
GGTCAGGTCAATTGTAGAGCGACCTGCTTTGCTGTACCTCGAGGCACGGTGAGACGCTCTT

b      Q S S N I S L D E T T W S S V P L C E K -

```

FIGURE 4B

GATGCATCTATGGTATGCCCTAGCCAAGGTATTTGCAGAGAAAGCGGCGTGGGAGTTCGC
 481 -----+-----+-----+-----+-----+-----+ 540
 CTACGTAGATACCATACGGGATCGGTTCCATAAACGTCTCTTTGCCCGCACCTCAAGCG
 b M H L W Y A L A K V F A E K A A W E F A -
 CAAGGAGAACGGCATCGACCTTGTGACTGTCTCCCGTCGTTTCGTGATCGGGCCCAGTTT
 541 -----+-----+-----+-----+-----+-----+ 600
 GTTCCTCTTGCCGTAGCTGGAACACTGACAGGAGGGCAGCAAGCACTAGCCCCGGGTCAAA
 b K E N G I D L V T V L P S F V I G P S L -
 GTCCACGAGCTATGCGTTACCGCTTCAGACGTCCTAGGCCTATTCCAAGGCGACACGGC
 601 -----+-----+-----+-----+-----+-----+ 660
 CAGGGTGCTCGATACGCAATGGCGAAGTCTGCAGGATCCGGATAAGGTTCCGCTGTGCCG
 b S H E L C V T A S D V L G L F Q G D T A -
 AAGGTTTCAGCTCGTACGGAAGAATGGGGTACGTCCACATCGACGACGTTGCGAGCAGCCA
 661 -----+-----+-----+-----+-----+-----+ 720
 TTCCAAGTCGAGCATGCCTTCTTACCCCATGCAGGTGTAGCTGCTGCAACGCTCGTCGGT
 b R F S S Y G R M G Y V H I D D V A S S H -
 CATCCTGGTGTACGAGGTCCCCCAGGCCGCGGGAGGTACCTGTGCAGCTCAGTGGTGCT
 721 -----+-----+-----+-----+-----+-----+ 780
 GTAGGACCACATGCTCCAGGGGGTCCGGCGGCCCTCCATGGACACGTCGAGTCACCACGA
 b I L V Y E V P Q A A G R Y L C S S V V L -
 GGACAACGACGAGCTGGTCTCCTCGCTCGCGAAACGCTACCCGATATTCCCCATACCCCG
 781 -----+-----+-----+-----+-----+-----+ 840
 CCTGTTGCTGCTCGACCAGAGGAGCGAGCGCTTTGCGATGGGCTATAAGGGGTATGGGGC
 b D N D E L V S S L A K R Y P I F P I P R -
 GAGGCTGAACAGCCCCTACGGCAAGCAGTCGTACCAGCTGAACACGTCGAAGCTGCAGGG
 841 -----+-----+-----+-----+-----+-----+ 900
 CTCCGACTTGTCGGGGATGCCGTTTCGTCAGCATGGTCGACTTGTGCAGCTTCGACGTCCC
 b R L N S P Y G K Q S Y Q L N T S K L Q G -
 GCTGGGCTTCAAGTTCAGAGGGGTGCAGGAGATGTTTCGACGACTGCGTGCAGTCGCTCAA
 901 -----+-----+-----+-----+-----+-----+ 960
 CGACCCGAAGTTCAAGTCTCCCAAGCTCCTCTACAAGCTGCTGACGCACGTCAGCGAGTT
 b L G F K F R G V Q E M F D D C V Q S L K -
 AGACCAGGGCCACCTGCTGGAGTGCCCCCTGTGAACTGCGATGGGGGTGCCTCCTGTGAA
 961 -----+-----+-----+-----+-----+-----+ 1020
 TCTGGTCCCGGTGGACGACCTCACGGGGGACACTTGACGCTACCCCAAGGAGGACACTT
 b D Q G H L L E C P L *

FIGURE 4C

CGCCCGTTTTTTTTTTCTTCAATAATTCCACGTCATGTCACGGTGTCTCGCGCAGACT
1021 -----+-----+-----+-----+-----+-----+ 1080
GCGGGCAAAAAAAAAAAGAAGTTATTAAGGTGCAGTACAGTGCCACAGGAGCGCGTCTGA

GCTACTGTCAGGTGTCAGGGCGTCATAGCTCACGGGCTCTACGGCTACATGAATAAAATG
1081 -----+-----+-----+-----+-----+-----+ 1140
CGATGACAGTCCACAGTCCCGCAGTATCGAGTGCCCGAGATGCCGATGTACTTATTTTAC

TCACGCTAGCTCGTCATTGCTTTGCCATTTAAAAAAAAAAAAAAAAAAAACTCGAG
1141 -----+-----+-----+-----+-----+-----+ 1197
AGTGCGATCGAGCAGTAAACGAAACGGTAAATTTTTTTTTTTTTTTTTTTTGTGAGCTC

XhoI

|

FIGURE 5

1 GAATTCTCGT CTCGGCGGTC AACTGAACCG TAAACAGTGG AAAGTGGATA
 51 CTCTTTCTCT CTCTGCAATC CGTGCCGTGG AAGCAAATGG CGCAGTCGCC
 101 TACTTATCAC ACCAACTTAT CACCTAGAAA AGCGACGCGT CCTGGATCGA
 151 TTGCAAATCT ACCTCCAACC AACCCAGCTT TGTATCTGCT TACTGTGATC
 201 ACCAAAGTTG TGCTGATACG ATGTGCGATT ATTGCTCTTT CTTCTCTAGA
 251 ATGTTCTGCT CGATGCTTTA TAAGAGAAGG TTGGTCAGCA TCGATCTCTG
 301 CCAGTGTCTA GCTGAGAAC A TGGTGACCTC AAGCAAGGGC AAGGTATGCG
 351 TAACCGGGGC CTCAGGCTTT GTTGCTCTTT GGCTTATCAA ACGGCTCCTC
 401 GAGTCTGGAT ATCATGTGGT AGGGACTGTC AGGGACCCAG GTATTTGCGA
 451 AATATCATTA CTATCGTATC AGTCCTCTTT ATTACATTAA TAATTCCTGA
 501 TTACCAATTT TTTCTTTTTT TTTTTTGGTA ACCCACAAGG AAATCACCAA
 551 AAGACAGCCC ACCTTTGGAA ATTACCTGGC GCTAAAGAGA GGCTGCAAAT
 601 CGTGCGAGCT GATCTGTTGG AAGAAGGGAG CTTGACAGC GCCGTGATGG
 651 CCTGTGAGGG TGTATTCCAC ACTGCATCCC CCGTCCTCGC TAAACCCGAC
 701 TCTACTAGCA AGGCATGCCA TCGCCGCATA TATATATGCA TATCTGGACC
 751 ATGCATCCTA CTGCAGCCTT TTCTATACGG AAGCGCGTTG CATCTACCGT
 801 ACGTGAAGCT AGCTATCTAA GCTAAGCTGT TTTTCATGCA TGCATGGTGC
 851 AGGAGGACAC GCTCGTCCCT GCGGTGAACG GTACTCTGAA CGTGCTGAGA
 901 TCGTGCAAGA AGAACCCGTT CCTGAAAAGG GTCGTCCTTA CGTCTTCGTC
 951 GTCTGCGGTG AGGATCAGGG ACGACGGTGG CCAGTCCAGT AACATCTCGC
 1001 TGGACGAAAC GACATGGAGC TCCGTGCCAC TCTGCGAGAA GATGCATGTG
 1051 AGATACTACT GAACAGTGTC TACTCTCTCT CTCTCTGTCA TCGATCTCAA
 1101 ACCGTGATCT GAAAAACACG CATGCGCGCA CACGTTGCCG TCGTCGTCCC
 1151 TTTTGTTGTT CACCCGAAGC TATGGTATGC CCTAGCCAAG GTATTTGCAG
 1201 AGAAAGCGGC GTGGGAGTTC GCCAAGGAGA ACGGCATCGA CCTTGTGACT
 1251 GTCCTCCCGT CGTTCGTGAT CGGGCCCAGT TTGTCCCACG AACTATGCGT
 1301 TACCGCTTCA GACGTCCTAG GCCTATTCCA AGGTATTCAT CTCAATCATT

FIGURE 5B

1351 CGTACGTGTT CTGGTTTTTCG TATGTTAAAT AGATGACTGG AAACAAGAGG
 1401 TATACATATA TATACTCTCT GTTCCTCCTC CCCCCCCCCC CCCACCCCCA
 1451 GGCGACACGG CAAGGTTTCAG CTCGTACGGA AGAATGGGGT ACGTCCACAT
 1501 CGACGACGTT GCGAGCAGCC ACATCCTGGT GTACGAGGCC CCCCAGGCCG
 1551 CCGGGAGGTA CCTGTGCAGC TCAGTGGTGC TGGACAACGA CGAGCTGGTC
 1601 TCCTCGCTCG CGAAACGCTA CCCGATATTC CCCATACCCC GGAGGTCAGT
 1651 CGTCGTCGCG TCGTCTGGAT GTGCGTGCCA TTTTAAGATC TCTGAACGGG
 1701 AGAGCCGTGT GCATGGTCCG TTCTGCTGCA GGCTGAACAG CCCCTACGGC
 1751 AAGCAGTCGT ACCAGCTGAA CACGTCGAAG CTGCAGGGGC TGGGCTTCAA
 1801 GTTCAGAGGG GTGCAGGAgA TGTTGACgA CTGCGTACAG TCGCTCAAAG
 1851 ACCAGGGACA CCTGCTGGAG TGCCCCCTGT GAACTGCGAT GGGGTGCCTC
 1901 CGCCTGTGAA CGCGCCGGTT GGGTTGCGTC CCGAACCCGC TGTTAATTCG
 1951 TTTTTTTTTT TTCAATAATT CCACGTCATG TCACGGTGTC CTCGCGCgA
 2001 CTGCTACTGT CAGGGCGTCA TAGCTCACGG GCTCTCCGGC TACATGAATA
 2051 AAAATGTCAC GCTCGTCATT TGCTTTGCCT TTTTTTTTGG GTTCGTTCTG
 2101 CGAaCTTCCG TTCGCTGTGT GTAATTGTGG CTGCCGGTCg CCTTGTCgGT
 2151 GTGGCGACTG ATGATGGTGA TCGGAGGCAG GCACCGGTGT GTGCGTGCGA
 2201 TCAACCGAAC GCCATGTGGC GGT TTGGATG GACGAATGGC TCCACCATCG
 2251 ATCTGAGTCA TTCGGATTTT GAACCGCTGA TTTGTCCACT GGACGGCACT
 2301 AGCATCAAGA TTCAGTCTCA AATCCCAAAT TCCTCAACGC AAAGCCACAA
 2351 AGAGAGAATG AATGTACAGT GTTTCAAGCC ACAGCTCAcT AGcTCAAAG
 2401 TAGTGAGCAT GcACACCTGT ATTTACATGC ATGCATGTAC ACCCCCACCC
 2451 CCACTACTTG TACACTTTGT AAACCAACCA ACCAACCAAC CAAGCAAGCA
 2501 ATCAAGCAAA CACACAGAGC AAACCGTACG TGGCTGGCGC C

Figure 6

```

301 CCACTGTCTAGCTGAGAACATGGTGACCTCAAGCAAGGGCAAGGTATGCG 350
      |||||||||||||||||||||||||||||||||||
1  .....GGTGACCTCAAGCAAGGGCAAGGTATGCG 29

351 TAACCGGGGCCTCAGGCTTTGTTGCCTCTTGGCTTATCAAACGGCTCCTC 400
      |||||||||||||||||||||||||||||||||||
30 TAACCGGGGCCTCAGGCTTTGTTGCCTCTTGGCTTATCAAACGGCTCCTC 79

401 GAGTCTGGATATCATGTGGTAGGGACTGTCAGGGACCCAGGTATTTGCGA 450
      |||||||||||||||||||||||||||||||
80 GAGTCTGGATATCATGTGGTAGGGACTGTCAGGGACCC..... 117

      .
      .
      .

501 TTACCAATTTTTCTTTTTTTTTTTTGGTAACCCACAAGGAAATCACCAA 550
      |||||||||||||||
118 .....AGGAAATCACCAA 130

551 AAGACAGCCACCTTTGGAAATTACCTGGCGCTAAAGAGAGGCTGCAAAT 600
      || |||||||||||||||||||||||||||||||
131 AAAACAGCCACCTTTGGAAATTACCTGGCGCTAAAGAGAGGCTGCAAAT 180

601 CGTGCGAGCTGATCTGTTGGAAGAAGGGAGCTTCGACAGCGCCGTGATGG 650
      ||||||||||| |||||||||||||||||||
181 CGTGCGAGCTAATCTGTTGGAAGAAGGGAGCTTCGACAGCGCCGTGATGG 230

651 CCTGTGAGGGTGTATTCCCACTGCATCCCCCGTCCTCGCTAAACCCGAC 700
      ||||||||||| |||||||||||||||||||
231 CCTGTGAGGGTGTATTCCCACTGCATCCCCCGTCCTCGCTAAACCCGAC 280

701 TCTACTAGCAAGGCATGCCATCGCCGCATATATATATGCATATCTGGACC 750
      |||||||||
281 TCTACTAGCA..... 290

      .
      .
      .

851 AGGAGGACACGCTCGTCCCTGCGGTGAACGGTACTCTGAACGTGCTGAGA 900
      ||||||||||| |||||||||||||||||||
291 AGGAGGACACGCTCGTCCCTGCGGTGAACGGTACTCTGAACGTGCTGAGA 340

901 TCGTGCAAGAAGAACCCGTTCTGAAAAGGGTCGTCCTTACGTCTTCGTC 950
      ||||||||| |||||||||||||||||||
341 TCGTGCAAGAAGAACCCCTTCCTGAAAAGGGTCGTCCTTACGTCTTCGTC 390

951 GTCTGCGGTGAGGATCAGGGACGACGGTGGCCAGTCCAGTAACATCTCGC 1000
      ||||||||||| |||||||||||||||||||
391 GTCTGCGGTGAGGATCAGGGACGACGGTGGCCAGTCCAGTAACATCTCGC 440

```



1001	TGGACGAAACGACATGGAGCTCCCGTGCCACTCTGCGAGAAGATGCATGTG	1050
441	TGGACGAAACGACATGGAGCTCCCGTGCCACTCTGCGAGAAGATGCAT...	487
	.	
	.	
	.	
1151	TTTTGTTGTTTACCCGAAGCTATGGTATGCCCTAGCCAAGGTATTTGCAG	1200
488CTATGGTATGCCCTAGCCAAGGTATTTGCAG	518
	.	
1201	AGAAAGCGGCGTGGGAGTTCGCCAAGGAGAACGGCATCGACCTTGTGACT	1250
519	AGAAAGCGGCGTGGGAGTTCGCCAAGGAGAACGGCATCGACCTTGTGACT	568
	.	
1251	GTCCTCCCGTCGTTTCGTGATCGGGCCCAGTTTGTCCCACGAACATATGCGT	1300
569	GTCCTCCCGTCGTTTCGTGATCGGGCCCAGTTTGTCCCACGAGCTATGCGT	618
	.	
1301	TACCGCTTCAGACGTCCTAGGCCTATTCCAAGGTATTCATCTCAATCATT	1350
619	TACCGCTTCAGACGTCCTAGGCCTATTCCA.....	648
	.	
	.	
	.	
1401	TATACATATATATACTCTCTGTTCTCTCCCCCCCCCCCCCCCCACCCCCA	1450
649A	649
	.	
1451	GGCGACACGGCAAGGTTTCAGCTCGTACGGAAGAATGGGGTACGTCCACAT	1500
650	GGCGACACGGCAAGGTTTCAGCTCGTACGGAAGAATGGGGTACGTCCACAT	699
	.	
1501	CGACGACGTTGCGAGCAGCCACATCCTGGTGTACGAGGCCCCCAGGCCG	1550
700	CGACGACGTTGCGAGCAGCCACATCCTGGTGTACGAGGTCCCCCAGGCCG	749
	.	
1551	CCGGGAGGTACCTGTGCAGCTCAGTGGTGCTGGACAACGACGAGCTGGTTC	1600
750	CCGGGAGGTACCTGTGCAGCTCAGTGGTGCTGGACAACGACGAGCTGGTTC	799
	.	
1601	TCCTCGCTCGCGAAACGCTACCCGATATTCCCCATACCCCGGAGGTCACT	1650
800	TCCTCGCTCGCGAAACGCTACCCGATATTCCCCATACCCCGG.....	841
	.	
	.	
	.	
	.	
1701	AGAGCCGTGTGCATGGTCCGTTCTGCTGCAGGCTGAACAGCCCCTACGGC	1750
842AGGCTGAACAGCCCCTACGGC	862

FIGURE 6C

```

1751 AAGCAGTCGTACCAGCTGAACACGTCGAAGCTGCAGGGGCTGGGCTTCAA 1800
      ||||||||||||||||||||||||||||||||||||||||||||||||
863  AAGCAGTCGTACCAGCTGAACACGTCGAAGCTGCAGGGGCTGGGCTTCAA 912

1801 GTTCAGAGGGGTGCAGGAgATGTTTCGACgACTGCGTACAGTCGCTCAAAG 1850
      ||||||||||||||||||||||||||||||||||||||||||||||||
913  GTTCAGAGGGGTGCAGGAGATGTTTCGACGACTGCGTGCAGTCGCTCAAAG 962

1851 ACCAGGGACACCTGCTGGAGTGCCCCCTGTGAACTGCGATGGGGTGCCTC 1900
      |||||||||||||||||||||||||||||||||||||||||||||
963  ACCAGGGCCACCTGCTGGAGTGCCCCCTGTGAACTGCGATGGG..GGTGC 1010

1901 CGCCTGTGAACGCGCCGGTTGGGTTGCGTCCCGAACCCGCTGTTAATTCTG 1950
      |||||||||||||
1011 CTCCTGTGAACGCCC.....GTT 1028

1951 TTTTTTTTTTCTTCAATAATTCCACGTCATGTACGGTGTCTCGCGCagA 2000
      ||||||||||||||||||||||||||||||||||||||||||||||||
1029 TTTTTTTTTTCTTCAATAATTCCACGTCATGTACGGTGTCTCGCGCAGA 1078

2001 CTGCTAC.....TGTCAGGGCGTCATAGCTCACGGGCTCTCCGGCTAC 2043
      ||||||| |||||||||||||||||||||||||||||||||
1079 CTGCTACTGTGTCAGGTGTGTCAGGGCGTCATAGCTCACGGGCTCTACGGCTAC 1128

2044 ATGAATAAAA...ATGTCACGCTCGTCATTTGCTTTGCCTTTTTTTTTTGG 2090
      ||||||||| |||||||||||||||||||||
1129 ATGAATAAAATGTCACGCTAGCTCGTCATTTGCTTTGCCATTTAAAAAAA 1178

2091 GTTCGTTCTGCGAaCTTCCGTTTCGCTGTGTGTACTTGTGGCTGCCGGTCTg 2140
      |
1179 AAAAAAAAAAAAACTCGAG..... 1197

```

SMALL PREMEIOTIC
 LARGE PREMEIOTIC
 PREME + LEPT
 LEPT + ZYGO
 ZYGO + PACHY
 PACHY + DIPLO
 DIPLO
 MEIOSIS I
 MEIOSIS II + Q
 TELOII + Q
 QUARTET
 Q + QR
 EARLY UNI
 EU + EARLY MID
 MID UNI
 LATE MID + LATE UNI
 LATE UNI

Bp

— 6583
 — 4987
 — 3638
 — 2604
 — 1908
 — 1383
 — 953
 — 623
 — 284

DEVELOPMENTAL GENE EXPRESSION IN MICROSPORO-
 GENESIS OF THE MALE FERTILITY GENE BS92-7.
 23 HR. EXP

FIGURE 7

Figure 8

1 GAATTCTCGT CTCGGCGGTC AACTGAACCG TAAACAGTGG AAAGTGGATA
51 CTCTTTCTCT CTCTGCAATC CGTGCCGTGG AAGCAAATGG CGCAGTCGCC
101 TACTTATCAC ACCAACTTAT CACCTAGAAA AGCGACGCGT CCTGGATCGA
151 TTGCAAATCT ACCTCCAACC AACCCAGCTT TGTATCTGCT TACTGTGATC
201 ACCAAAGTTG TGCTGATACG ATGTGCGATT ATTGCTCTTT CTTCTCTAGA
251 ATGTTCTGTC CGATGCTTTA TAAGAGAAGG TTGGTCAGCA TCGATCTCTG
301 CCAGTGTCTA GCTGAGAACA TG

Normalized Luciferase Activity as a % of Wildtype

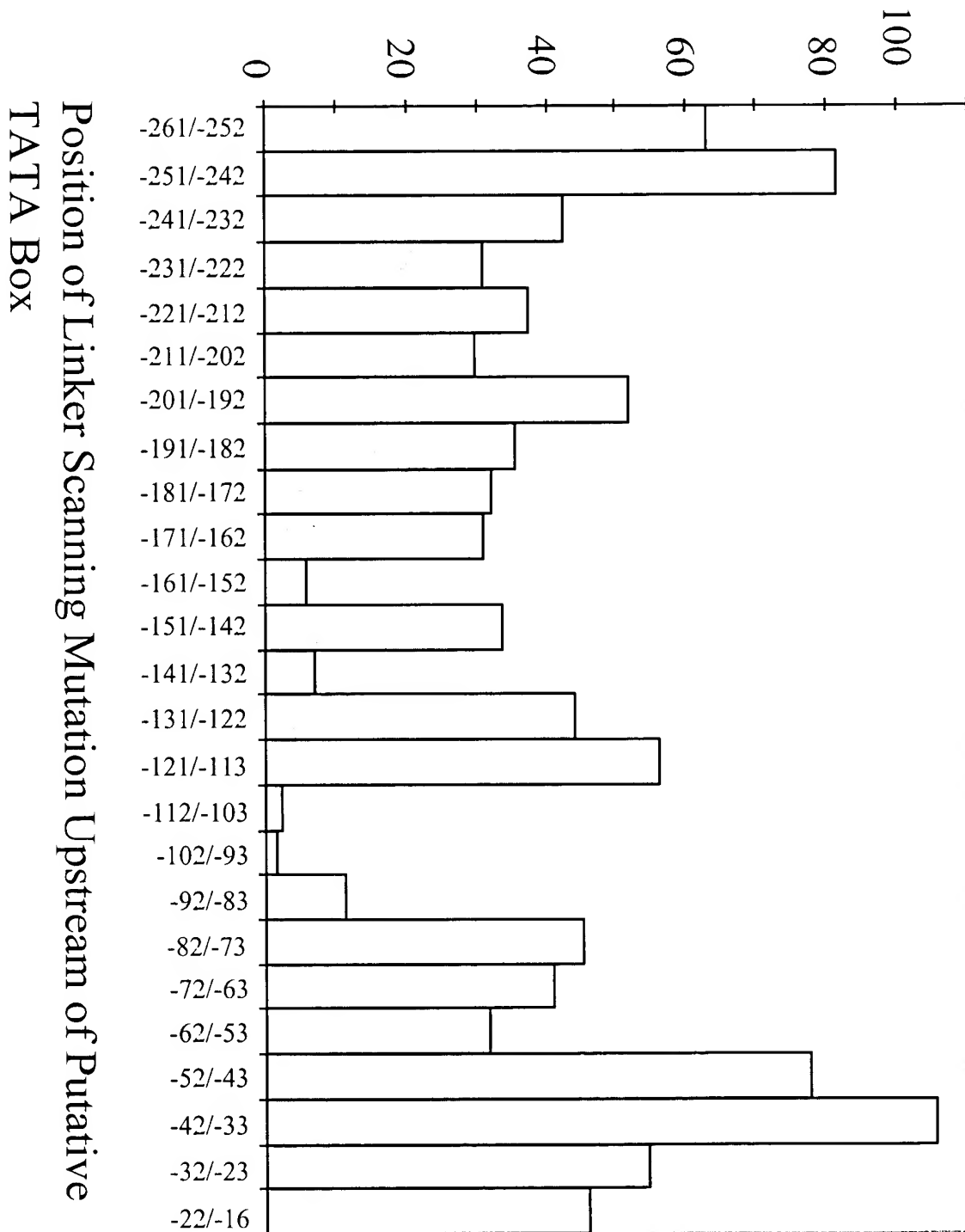


Figure 9

Figure 10

1 CGCGTCCTGG ATCGATTGCA AATCTACCTC CAACCAACCC AGCTTTGTAT
51 CTGCTTACTG TGATCACCAA AGTTGTGCTG ATACGATGTG CGATTATTGC
101 TCTTTCTTCT CTAGAATGTT CCTGCCGATG CTTTATAAGA GAAGGTTGGT
151 CAGCATCGAT CTCTGCCAGT GTCTAGCTGA GAAC**ATG**

BS7	MS45	35S	PAT
-----	------	-----	-----

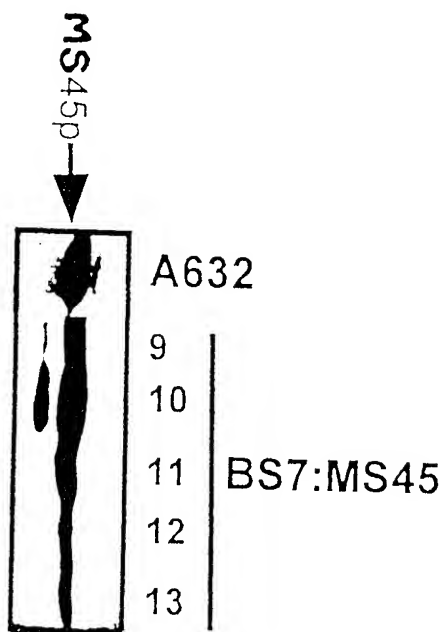


Figure 11

Figure 12

5
Sorghum V T G A S G F
GTAACCGGGGCTTCAGGCT 50
Maize
GTAACCGGGGCTTCAGGCT 34
10 V T G A S G F

I A S W L I K R L L E S G Y H V
Sorghum 51 TTATTGCCTCTTGGCTTATCAAACGGCTGCTCGAGTCTGGATATCATGTG 100
Maize 35 TTGTTGCCTCTTGGCTTATCAAACGGCTCCTCGAGTCTGGATATCATGTG 84
V A S W L I K R L L E S G Y H V

V G T V R D P G N H Q K T A H L W
Sorghum 101 GTAGGACTGTCTAGAGACCCAGGAAATCACCAAAAAACAGCACACCTTTG 150
Maize 85 GTAGGACTGTCTAGGAGACCCAGGAAATCACCAAAAAACAGCCACCTTTG 134
V G T V R D P G N H Q K T A H L W

K L P G A K E R L Q I V R A D L L
Sorghum 151 GAAATTACCTGGTGCCAAAGAGAGGCTGCAAATTGTGCGAGCTGATCTGT 200
Maize 135 GAAATTACCTGGCGCTAAAGAGAGGCTGCAAATCGTGCGAGCTAATCTGT 184
K L P G A K E R L Q I V R A N L L

E E G S F D N A V M D C D G V F
Sorghum 201 TGGAAGAAGGGAGCTTTGACAATGCTGTCTGATGGACTGTGATGGCGTCTTC 250
Maize 185 TGGAAGAAGGGAGCTTCGACAGCGCCGTGATGGCCTGTGAGGGTGTATTC 234
E E G S F D S A V M A C E G V F

H T A S P V L A K S D S S S K E E
Sorghum 251 CACACTGCATCCCCTGTGCTCGCTAAATCTGATTCTAGTAGCAAGGAGGA 300
Maize 235 CACACTGCATCCCCGTCTCGCTAAACCCGACTCTACTAGCAAGGAGGA 284
H T A S P V L A K P D S T S K E E

T L V P A V N G T L N V L R S C K
Sorghum 301 AACGCTTTGTCCAGCAGTAAACGGTACTCTGAATGTGCTAAGATCGTGCA 350
Maize 285 CACGCTCGTCCCTGCGGTGAACGGTACTCTGAACGTGCTGAGATCGTGCA 334
T L V P A V N G T L N V L R S C K

K N P F L K R V V L T S S S S A
Sorghum 351 AGAAGAACCATTCTGAAAAGGGTGTCTTACGTCTTCATCATCTGCA 400
Maize 335 AGAAGAACCCTTCTGAAAAGGGTCGTCCTTACGTCTTCGTCGTCTGCG 384
K N P F L K R V V L T S S S S A

1. *Introduction*
 2. *Background*
 3. *Methodology*
 4. *Results*
 5. *Discussion*
 6. *Conclusion*
 7. *References*
 8. *Appendix*
 9. *Tables*
 10. *Figures*
 11. *Supplementary Materials*
 12. *Abbreviations*
 13. *Conflicts of Interest*
 14. *Acknowledgments*
 15. *Author Contributions*
 16. *References*
 17. *Appendix*
 18. *Tables*
 19. *Figures*
 20. *Supplementary Materials*
 21. *Abbreviations*
 22. *Conflicts of Interest*
 23. *Acknowledgments*
 24. *Author Contributions*
 25. *References*
 26. *Appendix*
 27. *Tables*
 28. *Figures*
 29. *Supplementary Materials*
 30. *Abbreviations*
 31. *Conflicts of Interest*
 32. *Acknowledgments*
 33. *Author Contributions*
 34. *References*
 35. *Appendix*
 36. *Tables*
 37. *Figures*
 38. *Supplementary Materials*
 39. *Abbreviations*
 40. *Conflicts of Interest*
 41. *Acknowledgments*
 42. *Author Contributions*
 43. *References*
 44. *Appendix*
 45. *Tables*
 46. *Figures*
 47. *Supplementary Materials*
 48. *Abbreviations*
 49. *Conflicts of Interest*
 50. *Acknowledgments*
 51. *Author Contributions*
 52. *References*
 53. *Appendix*
 54. *Tables*
 55. *Figures*
 56. *Supplementary Materials*
 57. *Abbreviations*
 58. *Conflicts of Interest*
 59. *Acknowledgments*
 60. *Author Contributions*
 61. *References*
 62. *Appendix*
 63. *Tables*
 64. *Figures*
 65. *Supplementary Materials*
 66. *Abbreviations*
 67. *Conflicts of Interest*
 68. *Acknowledgments*
 69. *Author Contributions*
 70. *References*
 71. *Appendix*
 72. *Tables*
 73. *Figures*
 74. *Supplementary Materials*
 75. *Abbreviations*
 76. *Conflicts of Interest*
 77. *Acknowledgments*
 78. *Author Contributions*
 79. *References*
 80. *Appendix*
 81. *Tables*
 82. *Figures*
 83. *Supplementary Materials*
 84. *Abbreviations*
 85. *Conflicts of Interest*
 86. *Acknowledgments*
 87. *Author Contributions*
 88. *References*
 89. *Appendix*
 90. *Tables*
 91. *Figures*
 92. *Supplementary Materials*
 93. *Abbreviations*
 94. *Conflicts of Interest*
 95. *Acknowledgments*
 96. *Author Contributions*
 97. *References*
 98. *Appendix*
 99. *Tables*
 100. *Figures*
 101. *Supplementary Materials*
 102. *Abbreviations*
 103. *Conflicts of Interest*
 104. *Acknowledgments*
 105. *Author Contributions*
 106. *References*
 107. *Appendix*
 108. *Tables*
 109. *Figures*
 110. *Supplementary Materials*
 111. *Abbreviations*
 112. *Conflicts of Interest*
 113. *Acknowledgments*
 114. *Author Contributions*
 115. *References*
 116. *Appendix*
 117. *Tables*
 118. *Figures*
 119. *Supplementary Materials*
 120. *Abbreviations*
 121. *Conflicts of Interest*
 122. *Acknowledgments*
 123. *Author Contributions*
 124. *References*
 125. *Appendix*
 126. *Tables*
 127. *Figures*
 128. *Supplementary Materials*
 129. *Abbreviations*
 130. *Conflicts of Interest*
 131. *Acknowledgments*
 132. *Author Contributions*
 133. *References*
 134. *Appendix*
 135. *Tables*
 136. *Figures*
 137. *Supplementary Materials*
 138. *Abbreviations*
 139. *Conflicts of Interest*
 140. *Acknowledgments*
 141. *Author Contributions*
 142. *References*
 143. *Appendix*
 144. *Tables*
 145. *Figures*
 146. *Supplementary Materials*
 147. *Abbreviations*
 148. *Conflicts of Interest*
 149. *Acknowledgments*
 150. *Author Contributions*
 151. *References*
 152. *Appendix*
 153. *Tables*
 154. *Figures*
 155. *Supplementary Materials*
 156. *Abbreviations*
 157. *Conflicts of Interest*
 158. *Acknowledgments*
 159. *Author Contributions*
 160. *References*
 161. *Appendix*
 162. *Tables*
 163. *Figures*
 164. *Supplementary Materials*
 165. *Abbreviations*
 166. *Conflicts of Interest*
 167. *Acknowledgments*
 168. *Author Contributions*
 169. *References*
 170. *Appendix*
 171. *Tables*
 172. *Figures*
 173. *Supplementary Materials*
 174. *Abbreviations*
 175. *Conflicts of Interest*
 176. *Acknowledgments*
 177. *Author Contributions*
 178. *References*
 179. *Appendix*
 180. *Tables*
 181. *Figures*
 182. *Supplementary Materials*
 183. *Abbreviations*
 184. *Conflicts of Interest*
 185. *Acknowledgments*
 186. *Author Contributions*
 187. *References*
 188. *Appendix*
 189. *Tables*
 190. *Figures*
 191. *Supplementary Materials*
 192. *Abbreviations*
 193. *Conflicts of Interest*
 194. *Acknowledgments*
 195. *Author Contributions*
 196. *References*
 197. *Appendix*
 198. *Tables*
 199. *Figures*
 200. *Supplementary Materials*
 201. *Abbreviations*
 202. *Conflicts of Interest*
 203. *Acknowledgments*
 204. *Author Contributions*
 205. *References*
 206. *Appendix*
 207. *Tables*
 208. *Figures*
 209. *Supplementary Materials*
 210. *Abbreviations*
 211. *Conflicts of Interest*
 212. *Acknowledgments*
 213. *Author Contributions*
 214. *References*
 215. *Appendix*
 216. *Tables*
 217. *Figures*
 218. *Supplementary Materials*
 219. *Abbreviations*
 220. *Conflicts of Interest*
 221. *Acknowledgments*
 222. *Author Contributions*
 223. *References*
 224. *Appendix*
 225. *Tables*
 226. *Figures*
 227. *Supplementary Materials*
 228. *Abbreviations*
 229. *Conflicts of Interest*
 230. *Acknowledgments*
 231. *Author Contributions*
 232. *References*
 233. *Appendix*
 234. *Tables*
 235. *Figures*
 236. *Supplementary Materials*
 237. *Abbreviations*
 238. *Conflicts of Interest*
 239. *Acknowledgments*
 240. *Author Contributions*
 241. *References*
 242. *Appendix*
 243. *Tables*

			V	R	I	R	D	D	D	Q	.	.	P	N	I	S	L	D	E	
5	Sorghum	401	GTGAGGATTAGGGATGATGATCAGC.....CTAATATCTCACTGGATGA	444																
	Maize	385	GTGAGGATCAGGGACGACGGTGGCCAGTCCAGTAACATCTCGCTGGACGA	434																
10			V	R	I	R	D	D	G	G	Q	S	S	N	I	S	L	D	E	
			T	T	W	S	S	V	P	L	C	E	K	M	Q	L	W	Y	A	
	Sorghum	445	AACAACATGGAGCTCTGTGCCACTCTGTGAAAAGATGCAGCTATGGTATG	494																
15	Maize	435	AACGACATGGAGCTCCGTGCCACTCTGCGAAAAGATGCATCTATGGTATG	484																
			T	T	W	S	S	V	P	L	C	E	K	M	H	L	W	Y	A	
			L	A	K	V	F	A	E	K	A	A	W	E	F	A	K	E		
	Sorghum	495	CCCTAGCGAAGGTATTTGCAGAGAAAGCGGCATGGGAATTCGCCAAGGAG	544																
20																				
	Maize	485	CCCTAGCCAAGGTATTTGCAGAGAAAGCGGCGTGGGAGTTTCGCCAAGGAG	534																
			L	A	K	V	F	A	E	K	A	A	W	E	F	A	K	E		
			N	N	I	D	L	V	T	V	L	P	S	F	V	I	G	P	S	
25																				
	Sorghum	545	AACAACATCGACCTTGTGACTGTCCTCCCATCATTTGTGATCGGGCCCAG	594																
	Maize	535	AACGGCATCGACCTTGTGACTGTCCTCCCGTCGTTTCGTGATCGGGCCCAG	584																
			N	G	I	D	L	V	T	V	L	P	S	F	V	I	G	P	S	
30																				
			L	S	H	E	L	C	V	T	A	S	D	V	L	G	L	F	Q	
	Sorghum	595	TTTATCCCATGAACATATGTGTTACCGCTTCAGATGTCCTAGGCTTATTCC	644																
	Maize	585	TTTGTCCACGAGCTATGCGTTACCGCTTCAGACGTCTAGGCTTATTCC	634																
35			L	S	H	E	L	C	V	T	A	S	D	V	L	G	L	F	Q	
			G	D	T	A	R	F	S	S	Y	G	R	M	G	Y	V	H		
	Sorghum	645	AAGGTGACACGGCAAGGTTCACTTCTTACGGAAGAATGGGATACGTTTAC	694																
	Maize	635	AAGGCGACACGGCAAGGTTCACTTCGTACGGAAGAATGGGGTACGTCCAC	684																
40			G	D	T	A	R	F	S	S	Y	G	R	M	G	Y	V	H		
			I	D	D	V	A	T	S											